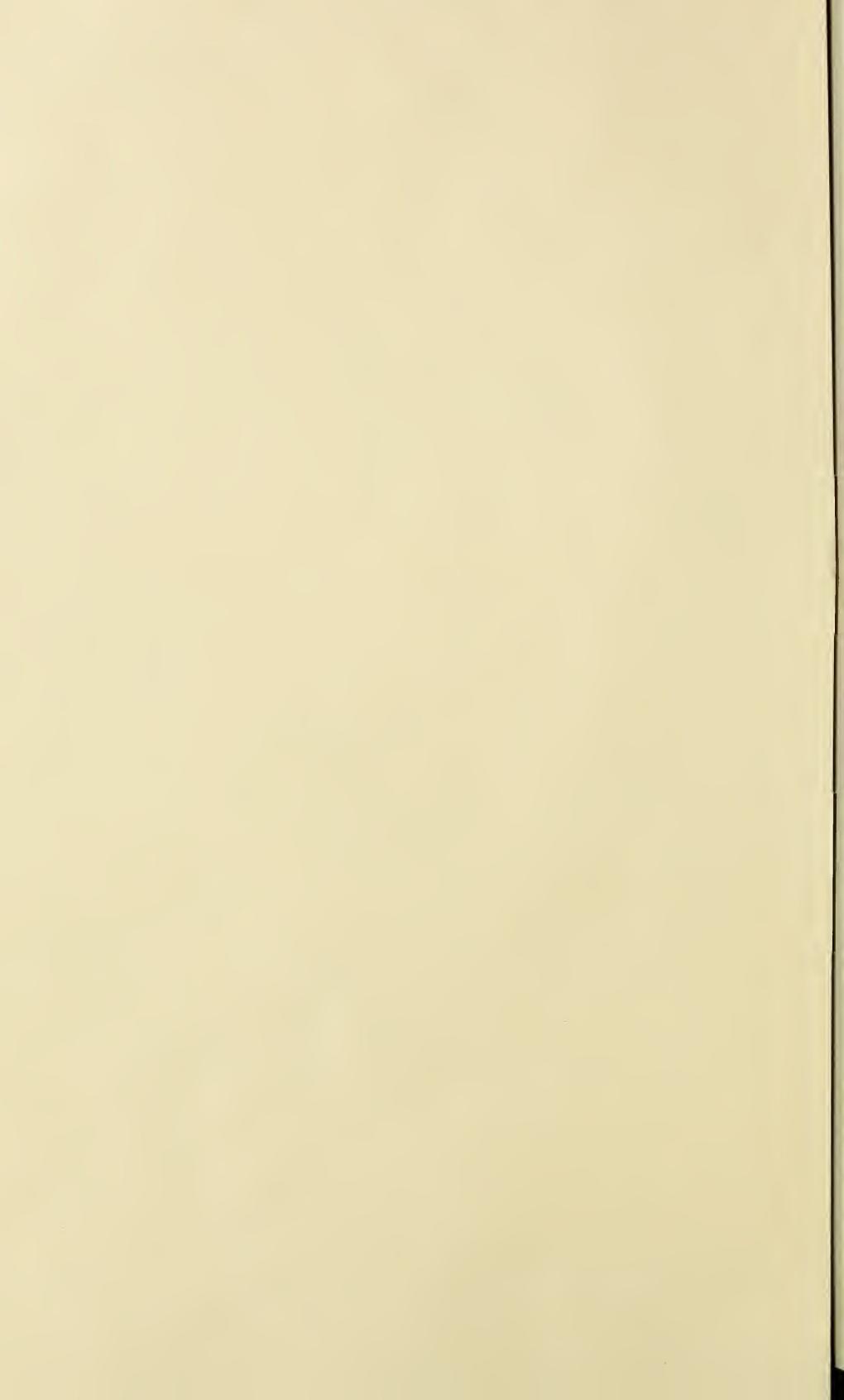


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**GLEANINGS IN
BEE CULTURE**

A JOURNAL
DEVOTED
TO BEES,
AND HONEY,
AND HOME
INTERESTS.

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SEMI-MONTHLY

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I'M AFRAID that, after reading p. 939, some beginner will expect a little more than he will realize. I suppose that \$28 dollars from a swarm in a fairly good season would be considered by Mr. Doolittle as rather exceptional.

I AM SURPRISED to find that, with a single exception, Maeterlinck's Life of the Bee is spoken of on both sides of the ocean as a work without fault. Can it be that its brilliancy and beauty blind the eyes to what are really serious defects?

IMPRISONMENT of nuclei for 24 hours, as mentioned p. 148, would not only give time for young bees to hatch out, but would go a great way toward making the bees stay that were already hatched out. [Yes, I think that is a good point.—ED.]

THE CHICAGO CONVENTION, Dec. 5, was a great success, both as to interest and numbers in attendance. C. P. Dadant, W. L. Coggshall, and others brought it up nearly if not quite on a level with the old Northwestern conventions which were so popular. No reason why there should not be a Northwestern at Chicago every fall. Editor York is a capital presiding officer.

"NO SET PROGRAM" is mentioned in the notice of Michigan convention, page 940. That seems to be getting to be quite the rule, and a good rule it is. The long papers can be read just as well in the bee-journals, but the face-to-face discussions can not be had without the meeting together. [Yes, providing we had live men to do the discussing; and usually our bee conventions have such men on hand.—ED.]

J. E. HAND says, p. 932, that the rule to winter outdoors colonies heavy in bees and stores, and cellar those light in either, holds good "wherever it is at all desirable to winter in the cellar." Perhaps, perhaps, friend Hand; but whenever I've tried win-

tering strong colonies out it has been at a loss. [But, generally speaking, I think friend Hand's rule a good one. Here is the situation for a large number. They have more bees than one cellar can accommodate. Obviously some colonies will have to be outdoors—which shall they be? The strong ones, of course.—ED.]

THERE YOU GO again, Mr. Editor, on a side track. You say, p. 929, that in some seasons \$5.00 per colony might be made in Florida, etc. Sure; and a good deal more than that in Marengo. But I don't begin to reach \$1.00 in the worst year; and I ought to reach \$5.00 in the *very worst year* if it is correct to say "that at least \$5.00 a year is a conservative estimate." [I beg pardon, doctor; I was giving you rather moderate wages. Let me see. Some time ago you figured up what the earning capacity of your bees was per colony. Have you got the data handy? If so, let us have it so that we can see how much you *are* satisfied with.—ED.]

F. B. SIMPSON, in *Review*, stands sponsor himself for the idea that freak best queens should not be selected to breed from, and tells me to come on with my brickbats. Well, here comes one, F. B. G. M. Doolittle says that for 30 years he has followed the plan of breeding from the best (and, if I understand him correctly, the more of a freak a queen was by way of securing exceptional yields, the better she suited him as a breeder), and as a result he has not only brought up his average, but has secured a much greater uniformity in the yields of different colonies. I don't say your plan is not better, F. B., but I believe breeding from the greatest yielders—freaks, if you please—yields excellent results; and it is easier to follow out than your plan for us common folk.

THAT SLEEPY FELLOW on p. 936 says he would pronounce a queen pure Italian if her workers were all three-banded or all five-banded. Please wake up, Rip, long enough to tell us some things. Would you pronounce pure a queen such as the editor mentions on the next page, with workers

varying from three to five bands? If not, and if there are no queens which produce all five-banders, do you pronounce impure all that produce part five-banders? Suppose I take the yellowest five-banders I can find, and have a queen of that stock mate with a drone of stock having black blood, but so little of it that no worker of that stock has less than two bands. The progeny of such union would not, of course, be pure Italian; and, if kept without any mingling, would not the black blood remain? By persistent selection from that stock, don't you believe I could get uniform three-banders? and would you call those uniform three-banders with the black blood still left in them—would you call them pure Italians?

AN EDITOR who will insist upon ungrammatical expressions ought to be "took" and "shook" until "well shaken." If "shook" (aside from its grammatical form) expresses to your mind an idea different from the idea expressed by "shaken," Mr. Editor, then there's something wrong with your mind, and the sooner you send it to some country school for repairs the better. If you mean bumped, say "bumped," as I think they do in England, but don't say "shook" when you mean either "bumped" or "shaken." I've had enough work trying to learn correct English without any bad examples "in high places." [Look here, doctor; if you are going to correct all the accepted ungrammatical English, you will have a job on your hands. For instance, when you sit on your doorstep, and call your wife out to admire the beautiful sunset, do you speak of the *setting* or *sitting* sun? Come now; there are bigger giants that are setting bad examples for you. Go for them. Now, honor bright, don't you think it sounds better to say the sun *sets* than *sits*?—ED.]

COMMISSIONER JONES, of the Illinois Pure-food Commission, is severely blamed on p. 942. I don't know, but I think he is not guilty. Newspapers are not always reliable. Some one else may have said what is credited to Mr. Jones, or what he did say may have been distorted. But severe blame is due somewhere, and, according to the *Amer. Bee Journal*, the Chicago *Tribune* is not willing to do its fair share to help undo the mischief already wrought. [I think you are probably correct, for I have already had intimations that a subordinate, instead of Commissioner Jones himself, furnished the reporter with that rank nonsense. In my editorial, you will remember, I stated that the Commissioner is reported to have said so and so; but whether he did or did not say it, if his sentiments are not expressed it is his bounden duty to correct the mistake. In the absence of any statement to the contrary, he stands as approving the nonsense. My own feeling is that, if I were in his shoes, the "subordinate" would be politely told to turn the reporters over to his superior; and, further, there would be a corrected statement over my own

signature that would set me right before a very large class of people—the honey-producers.—ED.]

THE MOUNTAINS have a big credit to their account, p. 941, for storing snow and ice to be used afterward to irrigate the great deserts. But ought not the debit side be given also? If the mountains were not there would there be any desert? Does n't the mountain condense and stop the moisture that would otherwise descend in beneficent showers on the now desert plain? [That is a hard question to answer. But even if the mountains did not act as a barrier to the moisture or rains, they still have the advantage that they are great storage reservoirs, if I may use so incongruous a term, for millions of tons of snow. Suppose, for instance, that Illinois, Iowa, Kansas, and Nebraska had always had to depend on irrigation. Think you they would have had the drouth of last season, or ever would have one? Never. Then, besides this, the land in the vicinity of the mountains can be watered whenever plant life requires it. The mountains make it possible to have a dry and hot atmosphere; and with storage reservoirs for water the conditions are such that certain kinds of crops can be grown that can not be grown with any success in the rain-belts. Understand, I am not claiming that irrigated lands are better than lands in the East; but the fact is, one supplements the other.]

Again, some people positively can not live in a rain-belt, owing to pulmonary troubles. There are thousands and thousands who have to find life and health by moving to these dry climates—climates made so, if your theory is correct, by the mountains. Somewhere I saw the statement that over half of the inhabitants of Denver and Los Angeles are "one-lungers." While this is probably greatly overdrawn, yet you would be surprised to see how many among your casual acquaintances have gone to these places because they had to or die in the East.—ED.]



Who says the winter has no cheer
For man or bird or beast?
If summer reigns within the heart,
Stern Zero brings a feast.

We have just received from Mr. Wartmann, of Bienna, Switzerland, two maps of that country by cantons, or counties. By the various colors one can see by one map just how many colonies of bees per 1000 inhabitants there are in a given locality; and by the other, how many colonies there are at certain elevations, which latter vary immensely, of course, in that country—"the

New Hampshire of Europe." Such an arrangement for the different States here would certainly be interesting, and perhaps profitable. The European governments pay great attention to such things. We thank Mr. Wartmann for sending the maps, of which he himself is the author.

We have just received a copy of a French bee-journal, published quarterly in Tunis, Algeria, Africa, entitled *Bulletin de la Societe d'Apiculture de Tunisie*. Algeria being an integral part of France, this journal is fully abreast with the times, although it says that bee-keeping there is mostly in the hands of the natives. It contains 32 pages the size of this, with a table of contents of great merit, especially good for beginners. Those who can read French will find this journal worthy of particular attention. The French have had control of Algeria since 1856. On the northern coast, nearly parallel with the shore of the Mediterranean, running a thousand miles west of Tunis (near ancient Carthage), there is a well-equipped railroad, built by French engineers. Morocco, on the west, has not a mile of railroad, but is still in practical savagery under Mohammedan rule.

AMERICAN BEE JOURNAL.

Mr. York wrote a vigorous protest to the Chicago *Tribune* relative to Commissioner Jones's misleading statement about the bogus nature of white comb honey, as explained in our previous issue. He delivered the article in person, with a section of his own best white comb honey. The *Tribune* printed a few garbled extracts from the article, but in a way that seems more like a defense of its course than an attempt to right a wrong. Doubtless that paper poses as a "friend of American labor," yet it rides rough-shod right over it. But the regard the Chicago dailies have for authentic information is shown by their treatment of the canteen question in that place. Bro. York, those sheets are hopeless. As you say, it is "exasperating" to read them.

ROCKY MOUNTAIN BEE JOURNAL.

This journal is holding its own in point of interest, and even gaining a little. The two following editorial items are worth pondering over:

The only logical outcome of the present great era of trust formation is national, State, and municipal operation of all industries dependent upon the concession of special privileges.

The "cellar aparies" in Los Angeles and San Francisco are credited with enormously augmenting the honey crop of California, and greatly to the detriment of producers of honest honey. Here is work for the new honey association. The glucose-mixers should be relentlessly prosecuted to the full extent of the law. No m-rey should be shown them—nor the adulterator of any other food product.

A new source of danger to the bees is described below:

At the recent meeting of the Utah State Bee-keepers' Association a good many bee fatalities are reported as resulting from the poisonous fumes exhaled by

the great smelter-stacks. Both bees and smelters are numerous in the vicinity of Denver, but we have never heard of the latter being fatal to the former. Possibly a different system of smelting, employing more virulent chemicals, is necessary for the extraction of the precious values from the ores of Utah. The remedy would seem to lie in the use of smoke-consumers; and their use would need to be compelled by a stringent State statute, as trust corporations have never been known to be influenced except by brute force or self-interest.

Concerning foul brood in Colorado, the following editorial is strong but interesting:

In years past, Colorado has, perhaps, suffered more from the ravages of foul brood, in proportion to the number of colonies kept, than any other State. The truth is, in some of the districts nearly all the large apiaries were swept away before their owners realized the fatal character of the disease. These men never read a text-book on apiculture nor a bee-journal, nor belonged to a bee-keepers' association, and resisted the bee-inspectors until their bees were dead and their hives a rotten mess of corruption. Most of these fossilized apiarists have never re-entered the ranks, and the few that did have stepped out into the light and have become progressive apiarists in all that the phrase implies.

Here is the next paragraph, which is more hopeful:

While foul brood whipped out many of the original apiarists of the State, it is not considered a serious menace by the intelligent "new blood" that has succeeded them. In the "locality" broadly included in the term Colorado (probably just as applicable to the entire Rocky Mountain region) the character of the honey-flow is such as to permit a system of management for comb honey that practically renders the apary immune from the disease.



A BURLESQUE ON LONG TONGUES.

The Factor of Time in Producing New Varieties.

BY S. E. MILLER.

For some time past, the wheels in my head have been working on a new problem. I have conceived the idea of developing a strain of bees whose tongues will be long enough to reach the nectar in the red-clover blossoms. It should not take over three to six months to bring this strain to perfection, and—just think! what an acquisition this would be for the queen-rearer! and it might also indirectly benefit the honey-producer. I think it was Dr. Miller who, some years ago, suggested that all jokes should be labeled. I will, therefore, state that the above is a joke. However, there is a serious side to this question, and it is the serious side which I propose to discuss.

The long-tongue discussion has hardly been discussed. There has scarcely been time to rear a tested queen and ascertain the merits of her workers since the discussion commenced, until—presto, change! and we have the long-tongued bees made to order; guaranteed to cure or money refunded. If your druggist does not keep them, send a dollar direct to Dr. Long Tongue, golden-banded red-clover queen-breeder.

Now, brother bee-keepers of the queen-rearing persuasion, do not conclude that I wish to compare you with the fellow who induces simple credulous people suffering from some imaginary affliction to send their hard-earned cash for his nostrums in the hope of being benefited. The advertiser has, of course, a right to say what he likes in the space which he pays for, provided he uses no bad language; but when we say we have been or pretend to be able to furnish queens whose workers will gather the nectar from red clover, are we not, in ninety-nine cases out of a hundred, claiming what is not true? Are we not going too fast in pretending to have now that which we may hope to develop in a decade or perhaps a century? Great improvement in the animal and vegetable kingdoms has not been accomplished in a day or a year.

Many patient, energetic, studious, and intelligent minds have worked on these problems for decades, even centuries. Many men have devoted almost their lifetime to the improvement of a single species, or certain varieties of various fruits, flowers, animals, and fowls. Note, Mr. Burbank, of California, has devoted a great portion of his life to the improvement of plums, potatoes, etc., and has also, I believe, by hybridization, produced some new and rare gladioli. Considering the above, how can we claim to have the desired long-tongued bee? Such a bee is something not to be found every day in every queen-rearer's apiary. Among many hundreds of queens that I have had under my observation in the past 16 years, I had one real red-clover queen.

One of the chief if not the first essential to the development of the red-clover bees of the future is the controlling of the mating of queens. With this accomplished we shall be in a fair way toward accomplishing our object. In the absence of this the best we can do is to prevent the flight of undesirable drones. The red-clover bee of the future will not come up to our standard simply by having a long tongue. The ideal long-tongued bee, in addition to possessing the long tongue, must be industrious, vigorous, hardy, as gentle as possible without detracting from any of the first four essentials; and in order to please some of us it must have yellow bands around it or be yellow all over. The queens must be prolific, and possess all other desirable traits.

Now, Mr. Queen-rearer (I almost said queen-breeder, but you are not a queen-breeder—you rear the queens, and they breed according to their own sweet will), have I set before you a hard task? If so, do not be discouraged, but go forth and set to work; and after you have done all you can, and your son has taken up the work where you left off on account of old age, and has devoted a score of years to the development of the ideal long-tongued bee, he may come back and report that he has lengthened the bee's tongue by a third, and has not let any of the other essentials retrograde, but, on

the contrary, has improved them; but don't you come back to-morrow or next week or next year, and say, "I've got that queen now," or I will tell you you're another.

Remember, now, ninety per cent of that queen's daughters (no, I will drop to fifty per cent) must be as good as she is; but if only ten per cent come up to the standard I can not take her, and your son will have to go back and teach his son to take up the work, and labor to reach the goal.

I should like to tell all about that red-clover queen; but as this article is already longer than I had intended I will simply state that her workers gathered nectar from red clover, and stored it in quantities in 1-lb. sections, while all other bees in the yard gathered practically nothing.

Bluffton, Mo.

[I have been thinking myself that something more ought to be said along the lines presented by Mr. Miller. There was a time when there was a great craze for yellow bands. It grew to such intensity that many breeders were looking only for color, forgetting every thing else. While this was true, there were a few who looked for excellence as well as beauty. But the temptation in most cases was to breed out dark and breed in the yellow, at a sacrifice of many very desirable qualities. It was J. M. Rankin or Dr. Miller, I believe, who started the discussion about long' tongues. It will be remembered that I discouraged the latter, and even ridiculed the idea; notwithstanding, he insisted that the Europeans had found that there was considerable variation in the length of tongues, and that we in America ought to give the matter some thought.

Two seasons ago, when red clover was at its height, I determined to look into the matter. The bees were working on a field of red clover near our out-yard. I noticed how the Italians (there were no blacks) probed down into the shorter flower-tubes of the clover-heads near the edges; how they would reach down into the longer tubes, and apparently reach in vain. I watched the bees come and go on one head for some little time. After they had secured all the nectar it was possible for them to get out of the little tubes, I pulled the head; then, taking the end of each tube in turn, I squeezed it up till I could force the drop of nectar out. In the long tubes I observed that the bees could not get more than a tenth, or merely a taste of the nectar. The shorter ones they sucked dry. I then began to see that, if those same bees had longer tongues, or tongues long enough to reach into the longest tubes, we should be able to get tons and tons of good honey that now literally goes to waste. It was during this season we had one colony from an imported queen that far outstripped every thing else in the apiary on red clover; and, as I have before stated, this colony would gather honey and store it when other bees would be trying to rob, or would starve

to death without a supply of honey already in the hive. I immediately began to measure the tongues of its bees, and I was not a little gratified to see that these same bees had longer tongue-reach than those that were inclined to rob at the same time. Fearing that I might have made a mistake I had one of our men do some measuring, and his observations were the same as mine. I then began to think that there might be something in long tongues. We called for reports. A few came in, that for the time being seemed to confirm the theory, but they really proved nothing. We asked for more reports, but they have not come in. As I have already said, no substantial proof has been advanced that long tongues are in proportion to the honey yield, and so far there is only a theoretical advantage. And now that two seasons have gone by, it is but fair to say that the proof is still lacking, either because of the apathy of bee-keepers to report or because there is no real direct relation between the two. But the value of our red-clover queen under consideration we considered rested not on the length of the tongues of her bees, but on the fact that they gathered honey from red clover when other bees were idle; and her daughters were sold because the mothers' bees gathered honey in excess of other colonies; and I believe that those who are advertising long-tongued stock are really placing more stress on their honey-gathering qualities, and not because they may have long tongues as compared with other bees in the yard.

Mr. Miller is strictly correct in saying that it will take years to stretch the tongues of our present varieties. But in the mean time let us concentrate our efforts toward breeding bees for business. If we get long tongues, well and good; but let us not go so far as to concentrate all our energies on yellow bands or long tongues, or some other feature that of itself amounts to nothing.—ED.]

THE SEASON OF 1901.

A Big Honey-flow for our Big Friend; Long Tongues and Honey-gathering.

BY G. M. DOOLITTLE.

I commenced to keep bees in the spring of 1869, so have been in the bee-keeping business for nearly 33 years. During those years we have had many peculiar seasons, but none so much so as that of 1901; therefore I thought the readers of GLEANINGS might like to know something about it.

We have been in the habit, of late, of laying considerable stress on location, which was right and proper; but the bee-keeper who fails to realize that seasons are *not* alike, and so conforms to set rules of working, expecting that the same rule will work the same result each season, if applied to the same locality, will find that success

will not always follow such a course. The successful apiarist must keep an eye out for all the little and big kinks which often come up in the business, so as to turn each and every thing to the best advantage, leaving no stone unturned which will allow of a pound of honey being obtained which would otherwise have gone to waste by not being treasured in the hive, and, finally, into some of the necessities or luxuries of home life for himself and family. These thoughts suggest themselves from the fact that a honey-flow came so suddenly from an unexpected source this season that Doolittle came very near being caught with his "porridge-dish bottom side up," last June. The bees were set from the cellars about the middle of April; but the weather was so bad for the next two weeks that it seemed that the results would have been better had they been left in the cellar till May 1. High winds, with mostly cool, cloudy weather, prevailed all through the last half of April, yet there would often come a few minutes of sunshine, by the sun's peeking out through some rift in the clouds, when the bees would go out in search of water and early pollen, only to get lost by the clouds going over the sun again. With May came nice weather for the bees, and they went to brooding with a will, as plenty of pollen was to be obtained from the different early pollen-bearers, while early honey came in from the willows and soft and hard maple. Then it came on to rain, and it did rain most of the time for nearly or quite a month, being cool withal the most of the time, so that, in spite of all I could do by way of feeding or coaxing, brood-rearing stopped pretty much entirely in all colonies, the "pretty much" being at the out-apiary, and the "entirely" here at home. I was so eager about this brood matter, as brood at this time meant workers in the basswood-honey harvest, that, before I was hardly aware of it, the red clover, standing on the hundreds of acres in this locality, commenced to assume a pinkish hue, and then turn red, something not known for nearly or quite 20 years, owing to a midge working in the head, thus blighting the buds just before the blossoms opened, so that we had neither blossoms nor seed in these parts for that length of time.

At about the same time the rain ceased, the skies cleared off, and the weather became warm, and then hot—so hot it could hardly be endured by humanity from June 20 to July 10. June 15th I stopped feeding, and on the 17th I thought it would be best to take the feeders off, some of which were placed on the hives in extra-surplus arrangements. When I came to the first of these surplus arrangements I found the bees in there building comb with a little thin nectar in the cells, the sight of which stimulated me to greater activity, if possible, than that manifested by the bees. Feeders were rushed off, and the supers, filled with sections, rushed on, so that the night of the 18th found every thing in readiness for the

harvest, which, by the 20th, was coming in at a good basswood rate, only that the nectar from clover is much thinner than that from basswood. Had I not had every thing in readiness to set right on the hives (the surplus arrangements being all filled during the winter with sections having foundation and baits in them) I should have lost much from this rush of nectar coming on so rapidly from an unexpected source. The red clover continued in bloom from June 15 till nearly August 1, that giving nectar in June and the first third of July being mostly from the small kind, while, beginning with July 10, the mammoth kind gave the most, the yield from each being curtailed to quite an extent, as field after field was cut for hay. Basswood yielded fairly well, but the yield from this was mixed with the clover yield, so that it was impossible to tell just what the basswood yield would have been had no clover been in bloom.

With August came a dearth of honey which lasted till about the middle of that month, when buckwheat began to yield very moderately, and continued thus for about two weeks, when the season for 1901 was over, so far as honey was concerned. The larger number of colonies in each apiary were heavily drawn on for queen-rearing, those at the out-apiary to supply bees for nuclei, and those at home by having their queens taken from them to supply early orders, so that I can not tell what the yield from the whole would have been had these colonies not been robbed in this way. From the few colonies which were not drawn on in this way I obtained an average yield per colony of 180 lbs. of section honey, here at the home yard, and about 175 at the out-apiary, this being the highest average yield of any year in my bee-keeping history. The best before was in 1877, when the average yield was 166 $\frac{2}{3}$ pounds per colony. But in 1877 a small part was extracted honey, while this year I extracted none.

Having the results at my command, and seeing that Prof. Gillette, of the Colorado Experiment Station, desired bees for the purpose of measuring their tongues, I sent him 12 bees from each of four colonies, numbering them as 1, 2, 3, and 4. No. 1 was from my old honey-gathering stock, which I have been about 30 years in trying to perfect. No. 2 was from a queen I got by way of exchange in 1900; No. 3 was from a golden breeder, and No. 4 was from a queen of the long-tongued stock introduced April 29, 1901.

Colony 1 gave 261 completed one-pound sections, 21 partly filled, and had about 42 lbs. in their hive October 1 for wintering, or about 317 lbs. all told.

Colony 2 gave 44 poorly filled sections, and had 12 lbs. in the hive October 1, or about 54 lbs. in all.

Colony 3 gave 68 completed sections, and had 37 pounds in the hive October 1, or 105 lbs. in all. But this colony was drawn on for brood for queen-rearing several times a week during the whole of the season, so it

would be impossible to tell just what it would have done had it been otherwise.

Colony 4 gave 65 sections and had 28 lbs. for winter. The result of Prof. Gillette's measurements is as follows: No. 1 gave an average tongue-length of 25.4 hundredths of an inch; No. 2, 25.6; No. 3, 25.6; and No. 4, 25.8. From these measurements it will be seen that the bees from the long-tongued stock really had the longest tongues by four-tenths of a hundredth of an inch over No. 1. It will also be seen that the colony having the shortest tongues gave more honey by 65 pounds than all of the other three colonies, having longer tongues, combined. All were worked as nearly alike as possible, with the exceptions noted.

It may be claimed that all these colonies gave bees with unusually long tongues. This may be so; but it does not prove that the gathering was in proportion to the length of tongue.

On page 401, May 1, 1901, I see a proposition to send the measurements of tongues from both good and poor workers to Dr. Miller, so he could tabulate a report of the same. I have been looking anxiously for that report; but if it has been given I have failed to see it. When Rambler reads the above he may feel different from what he did when he wrote on "back numbers" on page 745. No, no, Rambler; Doolittle always rejoices when one brings out something ahead of what has been done in the past, and never thinks of "whacking" back because some one has been enabled to give an advanced thought on something he has dug out. I have been experimenting and writing these 30 years only that I might be of some little help to the bee-keeping world; and to the one who is thus working, improvements which are real are always a cause for rejoicing. True Christianity consists, in part, according to the Bible, in making the world better for having lived in it.

[A partial answer to this is given in the answer to Mr. Miller, just preceding. In the record of your four colonies, the measurements of the tongues are so nearly alike that really there is no difference, at least for practical purposes—that is, honey production. Between the bees in No. 1 and those in No. 4 there is only $\frac{1}{100}$. This is so infinitesimal that it counts for nothing. If, however, No. 1 showed a tongue-reach of $\frac{1}{100}$ and No. 4 $\frac{2}{100}$ or $\frac{1}{50}$, then there would be a decided variation. It is evident, however, that colony No. 1 did not produce the 317 lbs. of honey, all told, because its bees had longer tongues than those of the others. Its honey-gathering qualities were dependent on some other characteristic or combination of them. Prof. Gillette's figures show tongue length. Now, it may be that the actual tongue reach was much greater in the colony that produced the largest amount of honey than in the others. You will remember I have drawn a distinction between tongue reach and tongue length.—ED.]

RAMBLE 195.

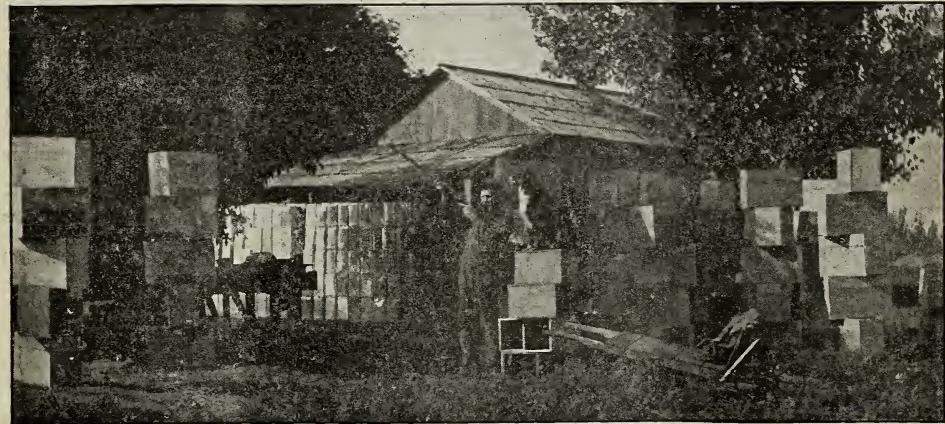
Peculiar Conditions in Central California ; the Rapid Growth of Alfalfa ; too Much Irrigation the Cause of Blight in the Blossoms.

BY RAMBLER.

It does not take a great amount of observation in Central California to learn soon that the conditions for honey-production are entirely different from what they are in the older and more familiar fields in the United States; and, furthermore, the conditions are very perplexing. In New York, where I first learned to sling honey, and, in fact, in all portions of the East, if honey comes at all we know within few days when the flow will be at its best, and we can prepare our colonies accordingly; or, in other words, the wide-awake bee-keeper will have his dish right side up and will catch the liquid. It is the same in the sage districts of Southern California. But in the great San Joa-

upon the queen, and a great majority of the bees have been bred to no purpose. If the starving period continues until into July, strong colonies become mere handfuls; or, as Mr. Aiken termed it some time ago, the colony "evaporates," even with honey in the hive.

I am told that the bees do commence work sometimes in June upon alfalfa; but during the two years of my experience, this commencing to work has been between July 1 and not until late in the season. If the yield commences early in June, some of that big force bred in March and April holds out to gather some honey and to hold up the breeding of bees, and a good honey crop is secured. The same may be said with some modifications if the yield does not commence until July. During the past season the honey-yield was deferred until well up to September, and the alfalfa cut but a small figure in the yield; and upon this point I should like to compare notes with bee-keepers in other alfalfa districts, where irriga-



A CALIFORNIA BEE-KEEPER WITH DOG AND GUN.

quin Valley the bee-man does not know where he is at, half of the time. The bees start in very nicely in February upon the almond bloom, and then through March and into April there is a succession of fruit bloom; and just as the colonies begin to get ready to swarm, and do swarm sometimes, there comes a dearth of honey; and all through May, and often through June, the bees use up what little surplus honey they have gathered, and, unless fed, they starve.

It is during this starvation period that the bees are brought up with a round turn in their swarming plans; and, no matter how much honey they may get afterward, the fever does not return; and I am wondering. Mr. Editor, if it is the same conditions that check swarming in Texas and other points.

My experience in this location covers two years; and during this time all of the breeding from fruit bloom has been a useless tax

tion is practiced, and learn if the same conditions exist.

In Central California we have an abundance of water for irrigation. It is used lavishly upon the alfalfa-fields, and the growth of the foliage is rapid and rank. In the height of the season I planted a stake in the field, and every 24 hours measured a particular stalk, and for several days the average growth was $1\frac{1}{4}$ inches per day. All through April and May the alfalfa comes to maturity, and is mown; but the blossoms are of no use to the bees, for they are blasted.

The editor of GLEANINGS will remember the rank growth of alfalfa all around my cabin, and the fuzzy white tips of blasted blossoms. This condition continued all through the period of irrigation; and, as a consequence, alfalfa yielded but little honey. When I observe such effects I naturally try to find the cause; and I had a

suspicion that it was from too much flooding with water. In comparing notes with my neighbor, Mr. Fray, he entertained the same idea. He has kept bees in this valley for several years, and his explanation of the cause of blasted blossoms is very reasonable. He says that, when there is a light rainfall through the winter, little snow on the mountains, there is less water for irrigation, and it is taken from the ditches in June. Then the non-irrigated fields of alfalfa will bloom, and yield honey. But if there is a heavy rainfall, and all of the mountain reservoirs are filled, and the water is not taken off until August, there will be but little alfalfa bloom and honey, and that has been the condition during the past season.

To verify Mr. Fray's opinion, there was a patch around my cabin that did not get its drenching with water, and that particular spot was well covered with blossoms. It seems, then, that the conditions in Central California are directly the opposite of the conditions in the South. There they must have the rain; but here only a small amount is necessary; but with either a light or a heavy rainfall there is an uncertainty, when the flow will commence.

The past season has been one of extreme uncertainty. Up to Sept. 1 but little honey had been extracted; but late fall flowers came on in abundance; our hopes were revived; the extractor was operated clear up to Oct. 30; and in my case, where I expected barely three tons, nearly a carload was secured.

The great problem in this valley is to learn how to hold the bees in when they want to increase, and make them increase when they don't want to. I think the problem is not very hard to solve; but as my plan is as yet theoretical I will not now present it.

Before I leave Central California I wish to say a word about my good neighbors, and somehow I always have splendid neighbors. Mr. W. W. Westcott and his good wife are bee-keepers, and always working together in the apiary. Mr. W. could hardly open a hive unless the "Mrs." was on the other side of it operating the smoker. Perhaps her knowledge of bee-keeping was not very bookish, but upon one point she excelled; and that was in the baking of graham bread, an article of food for which the Rambler is partial.

Mr. Fray was another good neighbor. His portable honey-house was described some months ago. When not engaged with the bees he has a habit of taking long trips to the mountains, with dog and gun; and many a deer and bear and mountain lion have scented powder from his trusty rifle.

I herewith present his photo, with said gun and dog. He thought the pile of honey cans and cases around my cabin would show up well as a background. Said cans and cases were nearly all filled afterward, which is not a very discouraging feature.

Another good neighbor is a fine old Swiss

gentleman, and his combination is bees and a vineyard, and the product is honey and wine. That is not according to my idea for the use of grapes; but upon my first visit my neighbor did not know my sentiments, and he brought out a bottle of his choice wine. I told him I never drank wine.

There was a perplexed expression on his face, and in his broken English he said, "You vas him Ramblear; tid not I zee he peekture in him bee-baper you vas had a pottle?"



"Ha! you vas him Ramblear; tid not I zee he peekture in him bee-baper you vas had a pottle?"

"Oh! no, sir;" said I, laughing; "that was not a bottle, it was my camera. See, I have it with me now." He put up his hands as though to ward off any intention of picture-taking on my part, and I let that part pass; but in his apiary I found a great curiosity—a hive of bees and growing grass,

Bermuda grass is a genuine pest in this country; and when it gets into a vineyard, or an alfalfa-field, if neglected at all it will

soon take full possession. A hive placed near it, with a crack in the bottom, is sure to be invaded. The bees have a vexatious time with their octopus. I mentioned the case to other bee-men, but they treated it as nothing new, for they had all experienced the same thing, and a simple remedy is a tight bottom-board.

[The cause that brings about the cessation of swarming in Central California is very different from that which operates in Texas and Arizona. In the former, the bees stop swarming because starvation stares them in the face: in the latter, the very opposite extreme—an onrush of honey—checks increase.

All through the line of my travels I heard complaints about alfalfa-blossoms blighting at certain seasons and in certain localities. I remember distinctly my conversation with the Rambler at his cabin home on this point during the past summer; but at that time I think he had not fully settled in his own mind what was the cause. If it is indeed too much irrigation, then bee-keepers ought to contrive some way, if they have a grain of influence, to get their ranchmen neighbors to use less water. I should be inclined to believe that the very thing that brings about the blight of the blossoms would also operate to affect the quality and quantity of the hay. This is a matter for experiment stations to take up providing they have not already done so. In the mean time I should be glad to hear from any in the alfalfa regions, and have them give their experience and observations.—ED.]



DRONES AND QUEENS.

"Good morning, Mr. Doolittle. Did you ever read any of Mr. Kirby's writings?"

"Yes, I think so. He was quite a prominent man years ago, and thought by some to be quite an authority about matters pertaining to bee culture at that time."

"An old gentleman visited me a few days ago, and he said Kirby claimed that the drones assisted quite largely in the production of royal jelly, which he believed; and that good queens could not be produced unless there were plenty of drones in the hive where queens were being reared. I tried to make the old gentleman think that he was mistaken, but it was of no use; so I have come to see you to see what you think of the claim."

"This is only the unearthing of the old theory which Kirby and others believed in forty to fifty years ago."

"Why do you call it a theory?"

"Because all of my experience goes to

prove that the drones are of no use whatever except to fertilize the queens, with the possibility of adding their mite to the warmth necessary during cool nights for the development of the brood, and possibly in helping to maintain the desired heat for comb-building."

"But suppose a colony is very anxious for drones. Do you not suppose they would be more contented if they had such?"

"Undoubtedly, if a colony which was anxious for drones could be kept actually droneless, both in the brood and mature drone shape, drones would aid toward contentment; but I have never known a case of a colony desiring drones but that they would manage to raise some in some corner of the hive. So I reason that such a thing as keeping a colony, desiring drones, absolutely droneless, is pretty nearly, if not quite, a myth."

"But what was your experience going to prove—that Kirby's claims were only theory?"

"When this theory was being resurrected, some 25 years ago, I had a number of queens superseded early in May, before there were any drones in the apiary, and they were as good queens as I had ever reared. Now, if the drones assist in the preparation of royal jelly these queens should have been inferior, to say the least, to those reared when drones were plentiful. Is not this right?"

"It would look that way, certainly."

"Again, I have many times had queens reared in March and April, when there would be no drone brood in the hive, or any in any hive in the whole apiary; and after a month or more, when drones had emerged and were flying, had them fertilized and become fair queens. However, queens reared in a season when no honey or pollen is being gathered, and at a time when regular feeding can not be done, are usually inferior to those reared when honey and pollen are plentiful."

"But the old gentleman told me that if I would remove a queen from a colony having plenty of drones I would see a profusion of queen-cells dotting the combs, which I could not secure at a time when there were but few drones in the hive."

"This is another of the old ideas, and something I have proved as fallacious. In August, 1873, I think it was (I could tell by referring to my diary), I had the largest lot of queen-cells built by the removal of a queen which I ever had. The number, as I recollect it, was 163, yet this hive was devoid of drones at the time, having killed them after the basswood-honey flow was over."

"Were these cells all good ones, and did they produce all good queens?"

"Of course, all did not give good queens; but the number of as good queens as can be reared this way was in proportion to the cells built. If my memory serves me right, queens were reared from this colony on account of the queen showing no disposition

to rear drones, as she rarely laid eggs in drone comb before the middle of June."

"The old gentleman further said that, if a queenless colony of black bees was supplied with eggs from an extra choice pure Italian queen, the offspring would not be pure, on account of their being contaminated with the royal jelly produced through the black drones and nurses. What do you think of this matter?"

"Fallacious as any of the rest."

"Why do you say that?"

"The first Italian queen that ever came into these parts was an extra good one. In fact, I have had very few queens that would so nearly duplicate themselves in their queen progeny as this one would. As she came late in July, not a drone was reared from her brood that season, nor was there a single Italian drone or queen in all this section of country when she came. She was introduced into a colony of black bees, as there were no others to introduce her to; and as soon as the larvæ from the black queen were all sealed, she was taken out and introduced to another colony, when the former colony went to work rearing queens. Thus she was changed until queens were obtained for the whole apiary of about 25 colonies. These queens mated with black drones, of course, as well as to be raised by black bees. Now, according to what we have always been taught, these queens, having all mated with black drones, should have produced hybrid workers, or bees, a part of which should have been black, to say nothing about their being nursed by black bees, and fed royal jelly in which there was an element coming from the black drone, according to what the old gentleman would have us think."

"Yes. And did you not find it so?"

"No. Not one of those queens ever produced a black bee."

"That is strange."

"Yes, and I thought so at the time; but since then we have had other instances where queens were so thoroughly bred along the Italian side that their daughters never gave a black bee, though they met pure black drones. But when the daughters of these queens came to produce bees, then it was that part of the bees emerging from the cells were black. I used to think the theory of black nurses imparting impurity to the royal larvæ was invented to palm off poorly marked Italian stock. But as we have heard so little about this matter of late, I have not touched it before in some time."

"What is royal jelly, or what is it composed of?"

"As to what royal jelly is composed of, I do not feel competent to tell, not being a chemist. But all of my experience goes to prove that the drones have nothing whatever to do with it."

"Well, what is your idea then?"

"Ideas are of little value by the side of facts; still, I will tell you what I think, and perhaps some one will tell us in the

near future how far these ideas are out of the way. My idea is that royal jelly is the same food as that given to the worker larva during the first 48 to 60 hours of its existence, and that it is the abundance of the supply that is kept up from the time the larva hatches till the cell is sealed that changes the egg laid for a worker into a queen. It is also my opinion that said food is composed of honey, pollen, and water, taken into the stomachs of the nurse-bees and formed into chyme, when it is fed to the larva. But I must leave you now, as I have an article due for the *American Bee Journal*, which must be written yet to-day."



J. H. MARTIN, ALIAS "THE RAMBLER," IN CUBA.

MR. MARTIN, whom we sent from California to Cuba to write up bee-keeping in that island, famous for its honey, arrived there safe and sound. He writes us he is so well pleased with the country that he will sojourn there for a while. He will continue making the production of honey his business, and during his spare time he will make tours over the island, taking along his camera and gathering material for his Rambles. This series of articles will be unusually interesting, and will begin soon.

NOMINATIONS.

A SHORT time ago I nominated Mr. Wm. Rohrig, of Tempe, Arizona, and Mr. Harry E. Hill, of Fort Pierce, Fla., as possible members of the Board of Directors of the National Bee-keepers' Association. The latter, it will be remembered, is editor of the *American Bee-keeper*. While he appreciates the honor thus conferred, he says he deeply regrets the use of his name in this connection; that the *American Bee-keeper* prefers remaining outside, with the assurance that it will earnestly co-operate with the Association in every move which it recognizes as beneficial to the fraternity. He prefers, then, not to have his name appear as a candidate. Mr. Rohrig feels that he is not competent to fill the position; and that, if he thought his name would be seriously considered, he would ask to have some other name put in its place.

I can guarantee that either or both of the men would fill the office very acceptably; but I do not wish to push their names forward if they do not wish to be considered.

SLANDERS ON THE HONEY BUSINESS.

EVER since the alleged interview with Commissioner Jones, in which the latter is made to say in effect that all fancy and No. 1 comb honey is adulterated because it has

white cappings, there has been an unusual crop of slanders in the papers concerning the honey business. The result of this is that the bee-keeping industry has been damaged to the extent of a good many thousand dollars. We have sent every paper publishing such stuff a respectful protest, telling them the facts and sending a copy of our \$1000 reward card,* to the effect that we will pay that much to any one furnishing proof that comb honey is successfully manufactured, and so perfect an imitation that it can not be detected from the genuine. We have made our replies in such a way that it will be easy for them to back down if they will. The editor of the *American Bee Journal* and of the *Modern Farm and Busy Bee*, I note, are also engaged in the same work.

It is the duty of every bee-keeper who sees such false reports to answer them at once. The refutation should be couched in respectful language, and should be accompanied with proof or \$1000 reward offer.

I shall be glad to believe that Commissioner Jones did not utter the foolish statements that are imputed to him. I am also pleased to learn that, so far as he is concerned, he is probably quite willing to have all such statements corrected providing the papers will print his denial. At the Chicago convention recently, a committee consisting of Geo. W. York, C. P. Dadant, and Dr. C. Miller was appointed. But our subscribers must not expect these gentlemen to do all the work of answering these canards. A bee-keeper in his own locality has more influence—much more—than an outsider hundreds of miles away.

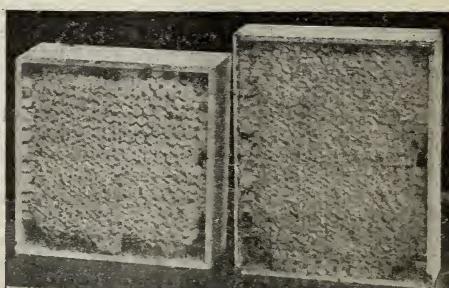
CANDIED HONEY—"EDUCATING" THE PUBLIC.

IN a letter recently received from R. C. Aikin, of Loveland, Col., he writes that he put up over 20,000 lbs. of honey in lard-pails, let it candy, and that now there is less than a fourth of it left, or a total of 16,000 lbs. of candied honey sold in three months. He is now buying more extracted, and proposes to put it in paper bags, just "to save money" and to head off the tin trust," as he says. This goes to show what can be accomplished in one's own locality by educating the consumers. In the East they have been taught to call for extracted, not candied. It may be well, in view of the large amount of the glucosid product on the market in jelly-tumblers, with a little piece of dry comb in it, to educate our consumers to the use of candied honey. Just imagine, if you please, the glucose people trying to make their product candy solid. If the consumers of the whole United States were "educated," or made to understand that our product in the granulated form of a certain amount of consistency was absolutely pure, they would buy honey in that shape and give the glucosid

jelly-tumbler the go-by. There, now, I do not mean to advocate that we of the East should put out candied honey exclusively. Oh, no! but I only desire to show that, where a locality is "educated" to the use of honey in this form, it would buy quantities and quantities of it, as well as clear extracted, because it would know it was getting *pure* honey.

SQUARE VERSUS TALL SECTIONS.

THE demand for the tall is certainly increasing. Already in several markets it is outselling the square shape. A short time ago I picked out two fancy plain sections from our stock, one of each type, photographed them, and here is the result.



They are both equally well filled, and weigh the same. One section is $1\frac{1}{8} \times 4 \times 5$ inches; the other one, $1\frac{1}{2} \times 4\frac{1}{4}$ square. While the figures above show an actual difference in thickness the appearance does not. Now, then, which box looks to be the larger of the two? If you were the consumer, and the same price were charged for each, which one would you take?

It costs the producer no more to produce one than the other. Many grocers find that the tall ones are taken in preference, and have been obliged to advance the price a cent or two, so that in some localities the tall box brings a higher price.

Now, please do not understand me as saying that this applies to all localities, for I know it does not; but many a bee-keeper would do well to produce the two kinds and let them stand on their merits on the market.

PROPOSED FOUL-BROOD LEGISLATION FOR NEW JERSEY AND THE STATE OF MAINE.

ELSEWHERE I have referred to the fact that an effort will be made to get a foul-brood law passed in New Jersey. Black and foul brood have crept over into that little State, and some of the bee-men there are beginning to realize that something must be done. The State is small, and an inspector's expenses would be comparatively light. While an appropriation of \$500 would be enough for Wisconsin, \$100 or \$200 would do for New Jersey.

Mr. George N. Wanzer wrote me, asking for suggestions. In reply I told him it was

*We will furnish \$1000 reward cards free for this purpose.

very important that there be a State bee-keepers' association; and that the first business of that association should be to pass suitable resolutions calling attention to the prevalence of foul brood in that State, and the need of legislation; that it would not be possible, ordinarily, to get a foul-brood bill passed unless the law-makers of the State know that the State organization of bee-keepers is back of the movement.

Mr. Wanzer, complying with my suggestion, is very desirous that such an organization be formed in his State. Every person interested in the welfare of the bee industry is therefore requested to send him, at Cranford, N. J., his name and address, so arrangements can be made for a date and place of the first meeting.

Mr. J. B. Mason, of Mechanic Falls, Me., is making a similar effort to call a State meeting for a like purpose. Those interested will of course put themselves in communication with him at once.

FOUL BROOD IN MICHIGAN; INSPECTOR RANKIN'S REPORT.

WE have just received a report which will speak for itself. I well remember when we were trying to get the law passed, under which Inspector Rankin was working, the statement was made that there was no need of this law; that foul brood was confined to small localities, and quite isolated from the great honey sections of the State. But what are the facts? Out of 3286 colonies, the Inspector finds 402 diseased. This does not look so bad; but when he says he found the disease present in 119 apiaries, or 57.7 per cent of the whole number, then the situation is worse than we had reason to suspect. It goes to show that the law was passed none too soon. If it had been enacted two years ago, foul brood would not have got such a start.

Another fact, somewhat alarming to Ohio bee-keepers, is that the disease is "more prevalent in the older sections of the country; that is, they are more diseased in Central and Southern Michigan than in the northern part of the State." Italics mine. That means to the Ohio bee-keepers that the disease is working very fast over into our State already. Originally it was in Ontario and Wisconsin; and it became so bad that foul-brood legislation had to be enacted in those States. When it was brought under control in Ontario and Wisconsin the disease naturally worked toward the State where there was no law—Michigan. After getting a good foothold, then the law was passed. The whole logic of events shows that Ohio must follow suit, for we can not and must not be the dumping-ground of Wisconsin, Michigan, and Ontario.

In a similar way the bee-keepers in the States bordering on New York (where there is a good law) can well stop and reflect. In fact, an effort is already being made in New Jersey, or will be made, rather, to get

protective legislation. California has a good law, but it is already evident that the disease had got a big start before the inspectors could get in their work.

To the Honorable Dairy and Food Commissioner:

SIR—I herewith submit my report for the work done during the months of July, August, September, and October, as State Inspector of Apiaries. I have visited in all 206 apiaries, having in them a total of 3286 colonies. I have found 402 diseased colonies, making a total of 12.1 per cent of those inspected. I have found the disease present in 119 apiaries, which is 57.7 per cent of the whole number inspected. It will be noticed that the majority of the yards that contained the disease have in them only a few, and many times only one colony. It is impossible to tell exactly how many of the diseased colonies have been destroyed by the owners—perhaps 50 per cent of those condemned. I have been compelled to burn only one colony against the will of the owner. These apiaries were scattered through the counties of St. Joseph, Hillsdale, Lenawee, Washtenaw, Jackson, Calhoun, Barry, Eaton, Ingham, Livingston, Oakland, Macomb, St. Clair, Lapeer, Genesee, Shiawassee, Clinton, Ionia, Muskegon, Montcalm, Gratiot, Saginaw, Tuscola, Sanilac, Oceana, Mason, Lake, Manistee, Wexford, Benzie, Kalkaska, and Antrim.

I have found the disease more prevalent in the older sections of country; that is, there is more disease in Southern and Central Michigan than in the northern part of the State. In the north it is confined to localities, and is not of very long standing. In almost every case it can be traced back to the bringing-in of diseased bees or fixtures from the South. In the Southern part, however, the disease is scattered prominently, and breaks out in yards, infecting many colonies, without any apparent source of contamination.

I have found many bee-keepers who are perfectly ignorant of the disease; and, even when it is present in their yards, and a large proportion of their bees are diseased, they fail to see that any thing serious is wrong. These bee-keepers, of course, belong to the class who keep a few bees as a side issue, and are not posted in modern apiculture. Then, again, I have found the disease present in the apiaries of specialists in bee culture, who are unfortunate enough to be located in the same vicinity with one of these other bee-keepers who are not posted. The uninformed man will not listen to the advice and pleadings of the specialists, but will leave diseased colonies to die, and be robbed out by the bees from the larger yard, in this way working ruin on the helpless specialist, who can not control the action of his ignorant neighbor. Then, oftentimes, when this specialist resorts to the protection of the law to compel his neighbor to clean up the diseased yard he is looked upon by the people of his vicinity with the utmost contempt.

The most active agents in spreading the disease are, first, that of robbing out colonies which have become weak and run down; and, second, that of using old hives in which the bees have died from the disease.

A grave difficulty arises when treating the bees to overcome foul brood, in that it is a very hard matter to impress upon the uneducated man the necessity of careful work and the nature of bacteria. He will neglect some small but important matter, or fail to take some necessary precaution in order to insure success. As a consequence, the treatment is frequently a failure. This is not always the case, however; many apiculturists are eager to learn all that is to be known about the disease, and by careful, persistent work have stamped it out of their yards. The treatment used by many apiarists has been to kill the infected colony with sulphur, remove the hive to a cellar, and cut out and save for home use all good honey, scrape clean, and disinfect the hive, finally burning all refuse, scrapings, and inside furniture. This method of treatment entails much less work than attempting to cure the colony, and the honey and also the hive are saved.

The needs are great, and many localities where the disease is known to exist have not been visited at all. Many of the localities visited this summer must be covered again at the beginning of next season to insure the effectual stamping-out of the disease. I have met with the most hearty co-operation on the part of the intelligent apiarists of the State. They have not only manifested an interest in the work, but, in many cases have materially assisted in the eradication of the disease in their locality.

Respectfully submitted,

JOHN M. RANKIN.

Lansing, Mich.

NOTES OF TRAVEL.

The Most Extensive Bee-keeper for his Age in the United States; More about Arizona Bee-keeping.

BY E. R. ROOT.

I desire to introduce to you to-day the youngest "big" bee-keeper in the United States, Mr. W. L. Chambers, of Phoenix, Ariz. For one so young he owns more bees than any other person in the land. Short in stature, slight in frame, boyish in face, he has achieved results in the little time he has kept bees that even some of our veterans who have been years in the business might well envy. At the age of 15 he started with seven colonies which he bought and paid for out of his own savings in chicken money. But, unfortunately, foul brood got into those precious seven the first season; but, nothing



W. L. CHAMBERS.

The youngest big bee keeper in the world.

daunted, he went about to cure them. Said his neighbors, "He never will make a bee-keeper; he is too frail—too small. He would have done better to stay in the chicken business;" and when foul brood broke out and his \$15 investment nearly proved a failure they said, "I told you so." But give up bee-keeping just because he had a little bad luck at the start? Not he. He was made of better stuff. Even if he was small and only a boy, he meant business. In spite of his loss from foul brood he saved out of what was alive more than enough to make up for his loss. Listen: He actually made one colony out of the seven the next season bring him in a revenue of \$20 of clean cash. If we add to this the increase and what the other colonies did we can see

that his investment panned out probably better than the chicken business would have done. But this was because he *started* right and had a business head, because he adopted the good rule of making the bees pay their way; for the only money he ever invested outside of that earned by the bees themselves was that \$15 of chicken money. He soon increased the seven colonies up to a fair-sized apiary. His bee money, as fast as he earned it, he kept and invested it in more bees and hives. So successful was he in his management that *he bought one whole yard outright, and made that yard pay for itself in one season.*

He could not afford to buy factory supplies; but somehow he managed to get a foot-power buzz-saw operated by means of a crank. He was too small and light to furnish the power, so he hired a man, turning the crank while he did the cutting of the boards. Mere boy as he was, there are no factory hives that are better made, and I think I know what I am talking about. He kept on working this way economically, keeping always before him the good rule of investing no money unless the bees furnished it; and so successfully has he carried out this policy that now he has over 500 colonies, and is *only 20 years old*. Think of it. This feat is the more remarkable from the fact that he was so frail and health so poor that he had to be taken out of school early. He could not do the ordinary hard work on the fruit-ranch of his father; neither could he confine himself to school, and therefore he took up bee-keeping. With the exception of the little help he hires, he does all the work himself. By using brains he manages to avoid the lifting of heavy extracting-supers, and thus saves his back (none too strong for such work) some strains that might otherwise be put upon him. Since engaging in bee-keeping he has had fairly good health, and, what is more, he not only makes both ends meet in his business but is making money.

As soon as Mr. Chambers found I was in that vicinity he chased up and down the country on his bicycle, trying to find me. Finally, after going hither and yon, just missing me, he located me out in the country, going to the home of Mr. Wm. Rohrig in the night. I then made an appointment to meet him the next day, and, sure enough, bright and early he was on hand with a pretty little trotter and a nice light easy single buggy, both of which were bought and paid for out of the profits of his bees.

We first drove over to his father's, who, we found, was running a fruit-ranch in one of the most favored sections in all Arizona, for that business. And such fruit! On arriving at his home a big dish of luscious mammoth strawberries was placed before me. Hot and dry as I was, those berries filled a long-felt want. While engaged in taking care of the fruit a younger sister of Mr. Chambers brought out an old hen which had come from an egg that had been hatched on the shelf in the house; for you

will remember that I said the climate in Arizona is so very warm and uniform that even eggs, under some conditions, if left long enough, will hatch right on the pantry shelves.

After stopping at the beautiful fruit-ranch of the senior Mr. Chambers we took the road again to visit some of the out-yards. The next place we stopped at was the Chambers Asylum apiary, so named because of a public institution in that vicinity. The yard is right in the midst of a lot of alfalfa-fields, and hence it is, of course, very favorably located.

Fig. 2 shows an interior view and how the hives stand on low benches running from one end of the shed inclosure to the other.

The object of this is to bring the hives up to convenient working distance. Some of them are deep square hives which he bought up that he does not like.

All through this part of Arizona are used very extensively little square frames; and when one buys up apiaries he very often is impelled to take a hive and frame that he does not like, and that was the case with Mr. Chambers. As fast as he can, he is trans-

ferring them into hives of Langstroth dimensions, as he finds they are more convenient, and better in every way; and in this connection I will state that he is very emphatic in that he wants thick-top-bar frames one inch wide, and gentle Italians. He thinks life is too short to fuss with poor contrivances when it costs but little more to have things right. I noticed that the bees at this apiary—in fact, at all his yards that I stopped at—were very gentle. This is owing to the fact that there are no breaking of burr-combs, or very little of it, to irritate the bees during extracting time, and the bees themselves are from imported Italian stock. We could go all through the yard without veil or smoker; and this was in marked contrast to my experience at some of the other apiaries I visited in that part of Arizona where hybrids and thin top-bars are used.

Right adjoining the Asylum apiary was an extracting-house, Fig. 3, having wire-cloth sides at one end, and covered with cheap cloth for a shade. Mr. Chambers has these structures at each yard; and during times of robbing he can carry on extracting secure from intrusion; and

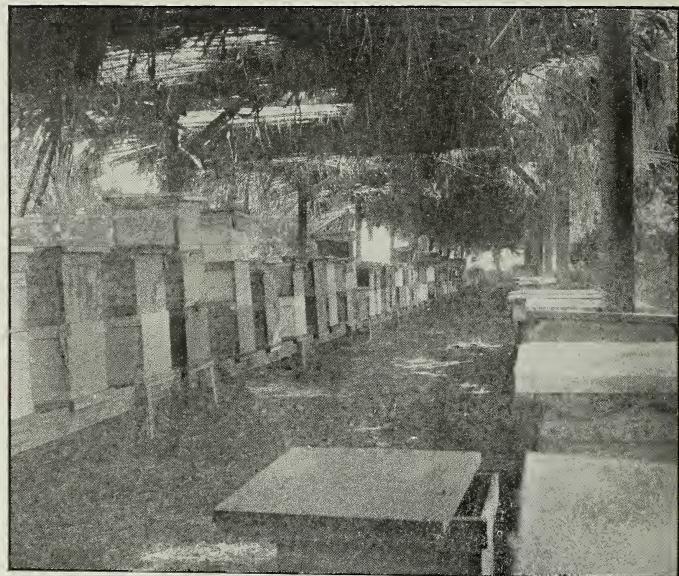


FIG. 2.—CHAMBERS' ASYLUM APIARY.

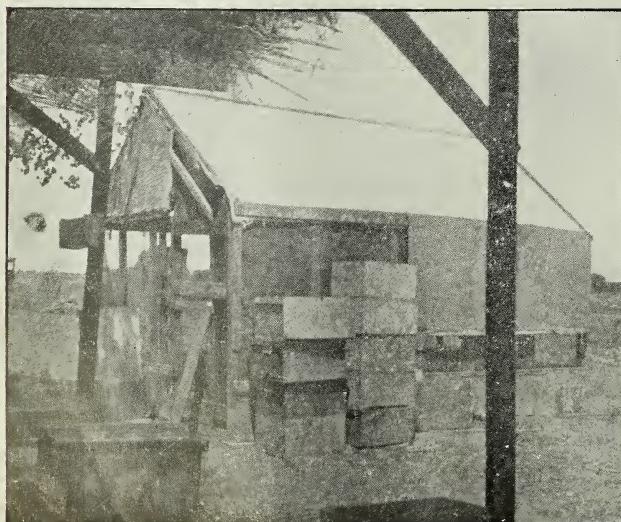


FIG. 3.—THE CHAMBERS EXTRACTING-HOUSE.



FIG. 4.—ANOTHER OF MR. CHAMBERS' OUT-YARDS.

those bees that do get inside are allowed to get out by means of bee-escapes.

HOW MR. CHAMBERS AVOIDS THE USE OF QUEEN-EXCLUDERS.

He prefers Langstroth hives, ten-frame in width. The full ten frames are used in the brood-nest, making a spacing of $1\frac{1}{8}$ from center to center. The extracting-superers are of the same width, and in these are put eight frames spaced far enough apart to fill out the space. This, he says, discourages the queen from going above, because the combs are too deep for ordinary brood-rearing. When he uncaps he cuts the combs down to the width of the top-bar, leaving the cells deep at the bottom as well as at the top. He acknowledges that some prefer excluders; but he says thick combs, in his experience, prevent the queen from entering them, and they are easier to uncap.

THE ECONOMIC IMPORTANCE OF COTTONWOODS TO ARIZONA.

I have already said that all the apiaries in Arizona, so far as I knew, were under those long sheds, with one exception; and that one is

the apiary of H. L. Sanderson, of Phoenix, located under a long row of cottonwood-trees, as shown in Fig. 5. Mr. S. himself stands in the foreground. These trees, I think, were only about four or five years old; and yet, look at their size! Give them five years more and they would be veritable monarchs.

Like the eucalyptus of California, cottonwoods are veritable God-sends to the arid climate of Arizona. They are very rapid growers — so rapid, in fact, that they in a few years come to be mammoth shade-trees.

This portion of Arizona was originally a perfect desert; and even after it was reclaimed by means of irrigation there were no trees. It was soon found that the cottonwoods would thrive amazingly, and they were set along near the ditches, in front of residences, or wherever water could be easily obtained; for nothing will grow here in Arizona, as I have already explained, un-



FIG. 5.—H. L. SANDERSON AND HIS APIARY UNDER THE COTTONWOODS.

less there is water. The climate and soil are such that, given water, the most luxuriant growth can be obtained; and this is especially true of the cottonwood. Nearly all the roadsides are skirted on one or both sides with irrigation-ditches; and along the ditches are these trees. In one of our drives with Mr. Chambers or with Mr. Rohrig, I do not remember which, we passed a line of them some 15 or 20 inches in diameter, and through them was running barbed wire. Posts had been set out, and wire tacked on them. The posts began to sprout at the roots and at the top, and grew into trees; and there they were, mammoth spreading shade-trees, with the wire running right centrally through them. They grow so rapidly that they can be grown and cut for firewood; but for building purposes the timber is almost valueless.



THICK HONEY DURING DRY SEASONS.

The past summer has cut our honey crop down to a mere pittance of what we expected in the spring. Bees can not make honey when there is none to gather. I managed to fill two alcohol-barrels with a mixed variety of extracted. I never saw such hard work in extracting as this year. It seemed as though the water was all evaporated out of the honey, and it was as thick as old buckwheat honey is in cold weather. Did you ever notice that the dry season seemed to work that way with the honey you were extracting? I shall sell my honey as it is, for I have had poor luck in canning it in glass cans. It seems funny that people will pay 15 cts. for a section of honey that will not weigh a pound, and lots of comb at that, when they can for a shilling get a pound of pure honey.

E. L. BLACKMORE.

Aplington, Ia., Sept. 25.

[In hot dry climates, especially those in the West, the honey is always thicker. It is not surprising that, during a very severe drought in a locality usually having considerable humidity, the honey should be thicker.—ED.]

A CORRECTION FROM CALIFORNIA.

Friend Root:—Referring to your last issue of GLEANINGS, page 907, letter from Jamal and your comments thereon: Both letter and comments are misleading. Your correspondent avers, "so he is told," they decided "there would be 10,000," and then goes on, without even an "if," to make his figures, portraying the immensity of the crop from "a mere speck." Here is no information as to the number of cases actually needed or used. Then, in your footnote,

you cite it just as if it were a fact that these people had bought 10,000 cases, and apparently assume that they must necessarily have many of them left on hand—to show that my estimate of the crop must be wrong. False premises lead to erroneous conclusions. On Feb. 3, 1901, the Escondido people asked me to submit prices on cases and cans, saying they might want from "3000 to 5000, if the yield is a big one." The yield was not a big one with them, and they did not take even as many as their lowest estimate. I am in position to know just how many they, as well as others, did take, and it was upon positive knowledge in the premises that I based my estimate for the whole of California. Of course the careful reader will see that there is absolutely nothing said as to actual yield, but the average reader will say, "Escondido is a little bit of a side station, and they bought 10,000 cases and did not have honey enough to fill half of them, therefore Clayton's a Bull, and the truth is not in him."

C. H. CLAYTON.

Lang, Cal., Nov. 23.

WASHINGTON AS A BEE COUNTRY.

Please tell J. O. Haynes, page 908, that, if he wishes to keep out of alkali water and hot weather, by coming to the State of Washington he will have to come west of the Cascade Mountains; then he will be in God's chosen country for water, climate, fruit, etc. Here we have no hot weather; 70° is the average in summer; and for a few days, not to exceed two weeks, it goes up to 80 or possibly 90. He will find no mosquitos, chigoes, ticks, flies, or gnats, and scarcely any fleas; only one kind of snake, and that a garter snake. In winter, away up here in the northwest corner of the northwest State of the Union, he will scarcely see it below 40°. I can now pick the finest of roses, pansies, daisies, sweet peas, red clover, white clover, and dandelion blooms all on my five lots, and can do so almost every week in the year. He will find no windstorms here; no thunder and lightning, and plenty of nature's best and purest spring and snow water he ever saw, and living is as cheap as anywhere, and plenty of every thing. But he won't find this a very good bee country, for the simple reason that the summers are entirely too cool, caused by a continued northwest wind which blows over the Olympic Mountains, which are continually covered with snow for many miles in distance. I have kept bees here six years. The first year I was away out in the woods, and they made over 100 lbs. per colony, part extracted and part comb. For the next four years they made from nothing to 25 lbs.; but this year they did well, making 125 lbs. of comb honey right here in town, and the country around here is overstocked with bees, and also cattle, which run loose and eat up all the bee-pasture.

A SUBSCRIBER.

Centralia, Wash., Nov. 27.



Rejoice, and be exceeding glad.—MATT 5:12.

The Bible is a hopeful book; in fact, it holds out hope when nothing else in the world does; and when the whole wide world has absolutely nothing to offer to make one hopeful or cheerful. It runs all through the book. It offers encouragement and cheer to the fainting heart under all circumstances. In that celebrated sermon on the mount, called the "beatitudes," Jesus offered encouragement to those in trouble. He said, "Blessed are the poor in spirit; they that mourn; the meek; those who hunger and thirst after righteousness; the merciful; the pure in heart; the peacemakers." What a beautiful character all these things in a single person would make up! Then he closes by saying that a blessing will come to us when we are persecuted and misrepresented for doing right. He says we may rejoice and be glad; and this thought is what I have taken for my text. Let us go on a little further in that chapter from which I have quoted. He tells us we are the salt of the earth and the light of the world. Oh what a power for good in the world is the man or woman who can always "rejoice and be glad"! I do not mean that one should always have a broad grin or be exhibiting joy or gladness by noisy demonstration. What I have more in mind is a quiet inward joy and gladness that is so deeply rooted it can stand the knocks and jars of the busy world. I do not see how there can be any real joy and gladness in any human heart without faith in God, or a dependence upon him. When you get up in the morning you ought to be glad. You *may* be glad. Thank God for giving you a human life to live, the *first thing you do*, and keep the thought in your mind all day long. Keep saying to yourself, if you can not do it otherwise, "Thank God for the *privilege* of showing faith and hope in him, in my daily contact with the world." I know how hard it is, for I am trying it right along. A letter was just laid on my table. The writer of it is a young man, and he tells me some of his troubles and trials. He says in the outset that it seems to him that "God is pretty hard on him." I presume we are almost all of us tempted at different times to let such thoughts come into our minds. We ask how it is that God *could* allow things to occur in this way. Do not harbor such a thought for an instant, dear friends. It is anarchy, or something worse than that. When Satan can persuade you that God is not *fair*, or that he is not doing his best for you, he will very soon get you into trouble; therefore thank God the first thing you do every morning as soon as you wake up. Then thank him for the difficulties that are

going to beset your path before the night comes. If you are letting God lead, you surely *will* meet with difficulty. You will be tempted to be cross and impatient and uncourteous. When I was up there in the woods I did not have nearly as much temptation of that sort as I do now. I was relieved of my responsibilities for the time being. Yes, I *might* stay up there and *shirk* my responsibilities. I might let letters lie on my desk from people scattered all over where GLEANINGS goes, wanting my advice in regard to matters of health. Others want advice about spiritual matters. Sometimes some of the great writers for our standard periodicals, because they have read these Home Papers, want me to give them my opinion in regard to their difficulties. Sometimes I am surprised and almost startled to think my opinion should be valued on matters away up above my quiet life. Suppose I should become cross and impatient, and inform the writers that I have more business on hand now than I can profitably attend to. It just now occurs to me that the above *may* be true; but what a poor specimen of a follower of Christ Jesus I should be if I should *refuse* to lend a helping hand!

The only way for me to do effective work is to keep hopeful, pleasant, good-natured, and brave. I do not get very much persecution nowadays; but I see a good many others who are persecuted oftentimes because they are helpless. I am sometimes tempted to do as Moses did when he struck down the Egyptian. But that was Moses' first and greatest blunder—that is, if I read correctly. I wish to do the very best and wisest thing for both oppressed and oppressor. How shall I do it? By being hopeful, thankful, and cheerful. It is the same way with you, my friend; for you can not expect to conquer difficulties at all unless you are hopeful and thankful, and, I should say, unless you are continually praying the great Father for help and advice and instruction.

The President of the United States is just now making himself exceedingly popular with the American people at large by putting men into the various important offices who are *best fitted* for them. In another direction he is making a host of bitter enemies by this new way of proceeding. May God give him grace, and may our people give him such encouragement that he will not care what his enemies *do* and *say*. I need not remind you that there is a tremendous need of capable men to fill important places—more need than the world ever knew before. A few days ago an engineer on the Wabash road made a mistake resulting in the death of about a hundred people. I mention this to suggest to you the need of careful men, or men who are competent in every way to take charge of important positions. Not long ago somebody on our premises turned a certain valve. I suppose there are a thousand or more valves in our whole establishment. Then

there are about as many electric buttons and switches. Once in a great while some boy comes to work for us who does not seem to have sense enough, or does not seem to have caught on to present times enough, to keep his restless fingers away from the valves or electric buttons. Well, as I was saying, somebody (we have not been able to find out who), at half-past four in the afternoon, turned a valve. It very soon threw things out of joint. Investigation was started; but as nothing *seemed* to be out of place anywhere, the matter was dropped till the next morning; then it was found that, had a fire occurred during the night, it would have found us with the water supply cut off. Now, it is not alone the engineers who occupy positions of grave responsibility, but even the small boys have more or less responsibility resting on their shoulders almost as soon as they enter any big establishment.

Well, some people seem to have the idea that one can not bear responsibility and keep good-natured. Some time ago we had an engineer in our employ who objected to the increased responsibilities (on account of enlarging our works) that rested on his shoulders. He said the responsibility was getting to be too great for any man; that, if we kept on, it would make a man crazy, and he would have to go to the insane-asylum. Well, I have thought since that time there might be a grain of truth in his remark. His successor is a very good-natured, active, intelligent man who has studied electricity, steam, etc., in a technical school. For many months he shouldered his cares and worries with wonderful cheerfulness and good nature; but when that valve I have mentioned was shut, without giving him any notice, or without his authority, he was pretty full of indignation. It may have been righteous indignation, for it was a serious matter. And by the way, it is a very difficult matter indeed to protest against certain kinds of carelessness or thoughtless meddling, and keep in a Christian frame of mind. With all of my talk, and with all my exhortations, I am afraid I am, in this line, only a poor bungling follower of the Lord Jesus.

The Bible teaches us that we should be hopeful under all emergencies, and I believe it is possible.

Our old pastor, Rev. W. S. Ament, who has been for years a missionary in China, gave us a talk last Sunday at our church. He was with the little band at Peking when they were surrounded by Boxers, and expected to lose their lives every minute. He said he was not afraid nor disturbed when he heard the first gunshot that seemed to be the opening of the attack on their little band. He said it gave him a thrill of joy, notwithstanding the danger, for it meant to him the *redemption of China* from heathenism. Now, I hope I should have the same courage if called upon to stand before the cannon's mouth; but I am really afraid my courage would not be equal to Bro. Ament's.

A good many public servants seem to think it is a part of their business to be overbearing and domineering. When I am traveling on the cars, and have my bicycle along with me, I am always in a hurry to get it from the baggage-car; and in order to save the time of the busy baggage-master I have been in the habit of taking the check off my wheel and handing both checks to the baggageman. A few days ago I commenced to slip off the leather strap, when the baggageman yelled out, "Let go of that wheel until I get ready to take the check off myself." I apologized, and assured him I had no thought of taking liberties; that in traveling I often did that way to save the baggageman's time. I was careful to catch his eye and let him see I was not only friendly and good-natured, but not at all appalled by his domineering way. He softened down a little, and said if he should let everybody help themselves to their own baggage the baggage would soon be gone, and he would get "fired" in no time. Now, this man could just as well have enforced his authority by telling me in a gentle way that my proceeding was contrary to the rules.

Not only should the Christian man or woman be cheerful and pleasant and courteous and kind to *humanity*, whether it be high or low, rich or poor, but he should be courteous and kind to domestic animals. I can hardly tell you how I have been pained within the last year by seeing horses scolded, whipped, and sworn at, when they were doing their very level best. When a horse comes out of the stable in the morning he thanks God for having given him a life to live. He is glad, too, at the prospect of going to work and helping along the great machinery of this world. How do I know? Well, I admit he has not told me so in plain words, but I know pretty well how horses feel by their actions, exactly as I know how bees feel by *their* actions. The horse enjoys life—that is, if his owner will let him enjoy it. It is fun for him to learn new tricks; to be taught to adapt himself to circumstances; to watch his master and see what is wanted, and to learn to do it in the very best possible manner. Oh how I have longed to see the owner or the driver give his horse a pat on the neck, and hear him tell him, with kind words, that he has done *well*, in order that *even the horse* may "rejoice and be glad"!

On our ranch we were pulling stumps and tearing out roots. Sometimes it was a question whether the team could pull the stump or whether they *ought* to pull it. The owner said they would pull it if we gave them a little time. When the horses had done their best, and the obstruction did not come, the wise driver would say, as he patted their glossy necks, "Well, girls, you have done pretty well; but I guess we will let you try it *now* in another direction." His team was a big heavy pair of mares. They understood what he meant by pulling off in another way, and they swung around

without trouble or getting tangled in the whiffletrees. When they pulled in the new direction some of the roots snapped, and they knew as well as he did that the stump was coming. After he had rested them a little he tried them in the direction they went first, and the stump was out. Now, it would be better for the team to let them succeed, even if it did take considerable time, than to have the horses see we tried the stump and gave it up. Horses easily learn to lose confidence in their driver. They take his "dimensions" about as quickly as he takes theirs. Now, suppose that driver had called his horses fools, and scolded them, and may be whipped them unreasonably because he got angry. It would have spoiled the enjoyment and happiness of the horses as well as their driver, perhaps, for all day. Do you smile because I suggest that a horse may be made miserable all day because some incident of the morning has broken his spirits or spoiled his peace of mind? Why, I have seen a horse that started out in the morning with head up, eyes bright and ears erect, catching in every word that was said, and every thing that was going on. I have seen such a horse hang his head in a sort of listless despair that was almost pitiful to behold, just because the man who happened to be over him for the time had whipped and scolded and sworn at him until his ambition was all gone, and he did not take any more interest in the work being done than the plow he was laboring to pull. The man who has the love of God in his heart so that it overflows constantly, even in the direction of his horse, will find a thousand things to indicate to him day by day that his horses know more of what is said and of what is being done than anybody gives them credit for. I have seen a driver, just because he was tired, fly into a passion, and yell at and jerk his horses when they were doing the best they knew how, but made a mistake. On one occasion I had a team that worked for me two days. A different man drove the team the second day. These two men had a different phraseology in talking to their horses. The first day the horses had been taught a peculiar way of operating to do their work best. When the new man got hold of the lines he did not know about this, and so he whipped, cursed, and yelled at them just because they followed the custom of the day before. I remonstrated, and explained matters; but as soon as I got out of sight this fellow was abusing the horses in just the same way. Why, I think the horses were entirely right and he entirely wrong. It seemed to me that day, from every point of view, that the brutes had more sense, and ever so much more of a human spirit, than the man who was trying to drive them.

I have not handled horses much for many years; but I told Mrs. Root I was beginning to want a horse. I wish especially to show the world there is at least one man who appreciates this wonderful gift that

God bestowed on his children when he gave them such a bright, strong, kind, intelligent, brave animal for a helper.*

Horses, above all other domestic animals, seem to have a sort of dignity about them. When I see their noble traits, and their willingness to endure almost any thing in the way of toil, even when not properly watered and fed, it touches my heart. When somebody confesses to me that his horse has not had a bit of water all day, and yet he is required to keep on with his unremitting hard work, I feel like losing my Christian courtesy and denouncing the man and defending the horse. Oh how I should rejoice to see every hard-working horse in our land in charge of a Christian driver — a driver who administers correction lovingly when it is needed, and who loves his horses, and loves God more because he, in his loving kindness, has given us this grand and noble domestic animal to minister to our wants!



SOME GLIMPSES OF THE GRAND TRAVERSE REGION.

On the next page are two kodak views of that "cabin in the woods" I have told you so much about.

While my daughter Carrie was looking at the picture she wanted to know which one of the above views shows the front door. Well, I rather think we shall have to call Fig. 1 the front door. There is not any highway within a quarter of a mile; but my bicycle-path that leads from the highway runs up to the open door. So I think this must be the front door. In the foreground you get a glimpse of the lawn made of lawn grass and white clover, that I made before Mrs. Root would consent to go there. The two large stones at each side of the peach-tree in the foreground were too heavy to get away handily, so we left one of them for a seat, and the other one goes down into the ground. The peach-tree was very handsome before the foliage dropped off, or most of it, and the same with the other one down in the corner.

When Mrs. Root came on to the ground she insisted on a platform in front of the

* Some of you may get the impression that I would let a horse run over me, and that he would soon get to be the master; but I assure you you are mistaken. I have remonstrated with my men frequently because they would start out to work without a whip. I would always let a horse see that I had a whip in my hand, or one where I could get hold of it, even if I did not use it. One man made himself hoarse in yelling at his horses to get them to start. After a while they learned to wait till he told them to go ahead about three or four times, and then they would slowly begin to move. I cut a whip for him; and after they saw it in his hand they started up promptly at the first word of command. I believe the horse loves the master more who makes him obey orders than one who lets him get into the habit of having his own way.

door; then everybody who came in was to scrape his shoes and rub off the sand on the doormat. The paths were all of clean sandy loam; but she said she did not want

there. But that was my mistake. Well, just below the floor line, on the south side, we have two long doors hinged along the top. These can be raised up, and propped up with a stick so as to look like an awning or porch; and this place under the building we use for a wood-shed on one end and for a tool-house on the other end. When we get through work the tools are all laid in the Daisy wheel-barrow, the swinging door raised up, and tools and all are quickly pushed in out of the rain. The window beside the door is covered with mosquito - netting, as you notice. Just over the roof you get a

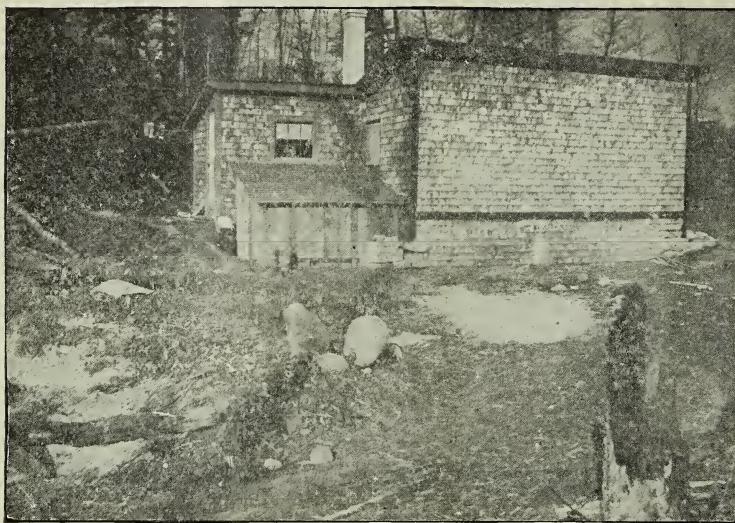


FIG. 2—OUR "CABIN IN THE WOODS." REAR VIEW.

the sand tracked in on the carpet, even if it was so white and clean. Then she wanted a board walk to the out-building. This structure was concealed by shrubbery before the leaves had fallen. At each side of this narrow board walk I raked off some level beds and sowed rye, so we had a very green lawn, even in November. The cornice, corner-posts, window-casings, etc., are painted green to harmonize with the woods; and it made a very pretty contrast with the cedar shingles. When the nights began to be cold we found the cold air coming up through the floor so as to make it rather breezy. First I

glimpse of the chimney, made of white bricks. I hauled the bricks and sand, and a carpenter built the chimney. He objected at first; but when questioned he admitted he

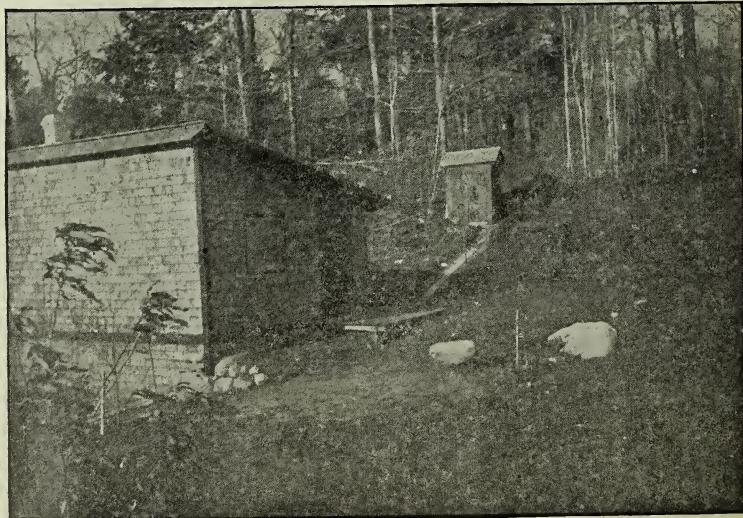


FIG. 1.—FRONT VIEW OF "CABIN IN THE WOODS."

shall have to explain that there are no windows on the south side, because I understood her to say she did not want windows

once built a chimney for himself. I told him I thought we two together could make one that would do.

Cut No. 2 gives a view of the back door. After we had been a month or more in a single room 14x20 we concluded we ought to have a little room by itself for the cook-stove. We had a few boards and shingles left, and so I made a woodshed that you see just under the window. This woodshed communicates with the cellar under the floor of the main building, so the wood can be pushed through right under the trap-door in front of the kitchen stove as I have explained. The back yard was not slicked up as I meant to have it. We did not get many sunny days in November; so when the sun

came out from the clouds, I got my camera hastily and took it just as it was. At the right-hand corner you get a glimpse of the

thought it would not burn very fast; but, notwithstanding, it was so hot we could hardly touch the panes of glass in the windows of the buildings, and the shingles be-



DIGGING POTATOES IN THE TRAVERSE REGION.

gan to smoke. Had the wind swung around so as to blow toward the building while the heat was at its greatest (the flames went almost as high as the tall forest trees), I do not think anything could have saved our little home; and the wind did swing around right toward the building about 20 minutes after the fire was at its height. After two such experiences I think I shall be more careful about burning big log-heaps or locating them so near the dwelling after this. The white spot near the building is where there was a heap of white sand—some we drew up from



THE HILBERT FAMILY IN THE POTATO-FIELD.

remains of the big log-heap. We waited for a day when the wind was away from the house. It was wet and snowy, so we

the bay to build the chimney. Although the soil is all more or less sandy, it is nothing like that very white sand that

comes from the shore of the bay. At the left of the picture, near the top, you get a glimpse of the evergreens mixed in with the beeches and maples. I think no view of the woods is so inviting—I might almost say entrancing—to me as one where evergreens are sprinkled here and there among the deciduous trees. All the soil around that little cabin in every direction is of wonderful fertility. Of course, weeds spring up also, like magic; but where you keep them down, and give the garden stuff a chance, this new woods soil seems to be equal to our old land in Ohio, even when it has tons of manure added. I will now give you some glimpses of cleared land.

I wanted to get a glimpse of the little folks—Jimmie and Gladys Hilbert. I meant to have friend Hilbert also, who holds the potato-fork; but in my desire to get the children and the potatoes I did not get the whole of him. By the way, I do not know but I would give quite a little money to have the readers of GLEANINGS see Jimmie and Gladys, and hear them talk. They are away off all over the farm, up to every thing and into every thing, and they talk like a couple of magpies. I can not tell what they are saying, but they talk back and forth, and understand each other without a bit of trouble. I am learning their language now, however, and can catch on pretty well.

By the way, don't you think those are handsome potatoes? This is the crop I told you about on p. 914, last issue—that one of 300 bushels to the acre. The frost caught them or they probably would have made more yet. It was about the finest stand of potatoes I ever saw. There was not a scabby one in the whole field of between three and four acres.

Here is a view of friend Hilbert and his family—three girls and two boys. On the right you see my little friend Alice I have told you about so many times. She did not want her picture taken; but her father made her come up and stand with the rest. It was pretty cold weather, and by some means she had got one of the boys' caps on when I snapped the kodak. Friend Hilbert and the two little chicks, I have already de-

scribed. The young man leaning on his potato-hook is Holly, aged 19, the boy who dug 125 bushels of russet potatoes in less than ten hours. The young lady standing near the basket of potatoes is Miss Erna, aged 14, who picked up the 125 bushels as fast as Holly dug them. Now, don't you think friend Hilbert ought to be a happy man with that nice little family?* They are workers, every one of them, and I don't think they ever ought to be scolded—that is, not very hard, even if they are sometimes forgetful, or do not feel like getting up as early in the morning as might be desired.

You see these potatoes are rounded up a little; but they are in a deep oblong pit, so they come but little above the surface of the ground. A little straw is put on, and the dirt is thrown over from each side a foot or more in thickness. Some say six inches of dirt is plenty above the straw—that is, if it is located on a spot where the snow is pret-



100 BUSHELS OR MORE OF

RUSSET POTATOES READY TO BE BURIED.

ty sure to be drifted over them during severe weather. In order to hold the snow, the potato-tops are usually spread over the heaps. Friend Hilbert had something like 1000 bushels of those russets on a little over three acres. I have explained that it was done by turning under clover in the fall

*It just occurs to me that we ought to have had Mrs. Hilbert also. I do not believe any of the crowd will feel hurt if I suggest that she is the best-looking one of the whole lot. There, hold on; I think I shall have to except Gladys. Well, Mrs. Hilbert is not only a very pleasant and nice-looking woman, but I tell you she is a hustler. May be friend H. does not know it; but if she had not been right by his side during these years they have struggled from poverty up to very comfortable circumstances, he never could have been standing where he is now, financially and every other way; and I wish to tell him once more that he should thank God from the bottom of his heart for the great blessings that are all round about him.

and sowing rye, and then turning the rye under when it was in blossom. He thinks the rye should have been turned under a little sooner. The russets would then have had more time to grow before the frost, and the straw would have been more thoroughly decayed. As it was, it bothered Holly about digging with a hook, as I have told you. Better turn the rye under before it gets to be hard and woody (say just as it is heading out), if you wish it to decay thoroughly by the time the potatoes are dug. On our Medina clay I have never found rye straw to bother in digging, even though we have sometimes waited until there were small grains in the heads. Well, the prospect now is that friend Hilbert will get toward \$1000 for the potatoes grown on that piece of ground. But, mind you, he can not do it *every year*. A good many times potatoes in the Traverse region bring only 20 cents; and they have sold for 18 cents — yes, *even 15*, when the markets were glutted. A good many are prophesying that the price will be low next year because everybody in that region is going to plant his "whole farm" to potatoes. I am inclined to think, however, if business keeps up generally as it is now, potatoes are not likely to be away down as they were four or five years ago.



SWEET CLOVER — IS IT A VALUABLE PLANT FOR HORSES AND CATTLE AFTER THEY LEARN TO EAT IT?

My request for reports from experience has brought out the following letters:

Mr. Root: — Having seen the statement by C. H. Zurburg, Bishop, Ill., in regard to sweet clover, I would simply say that is exactly the case in this vicinity. I have never known a horse or cow to touch it, although it grows abundantly along the roadside, stems as big as a man's finger, five to six feet high; but the bees gather lots of honey from it. ISAAC PARKER.

Lansing, Mich., Sept. 27.

Miss Nellie Adams writes me that, from her 20 colonies, she has taken 2100 pounds of section honey, and that the colonies have the upper and lower stories nearly all filled for winter. She has sold all the crop at good figures. She is the boss bee keeper, I think.

Some time ago you spoke about sweet clover being a good hay for stock. We are just overrun with it, and it is called a nuisance. We are obliged by the trustees to keep it mowed down along the road around each farm; and in all my travels I have found but one man who said his stock would eat it. I have seen cattle tied along my road fences, but the cows would not eat a bit of it if there was a bit of other grass that they could possibly get. I really believe they would starve before they would eat it. But it is a great honey-plant. R. L. MCCOLLEY.

Tontogany, O., Oct. 5.

Mr. Root: — I endorse all C. H. Zurburg, of Bishop, Ill., says on page 761, except the starving to death. Stock or man will eat anything before starving to death, as I witnessed in 1862 to '65. Sweet clover abounds in Western Indiana and Eastern Illinois, greatly to the detriment of the land-holders. We remember to our sorrow the many good things that were said about it in bee-papers. All but the one that it is

good for bees is untrue. I have pulled plants on a four-acre lot for thirteen years, to rid the lot of the stuff. I got only three plants in 1901—some hopes. We have the pure stuff, sold and described by bee-papers. Land-owners and tenants are much incensed at those who sowed it and the bee-papers that recommended it. We have to cut it along the highway.

You certainly have had enough evidence, such as Mr. Zurburg's, to convince a jury or an honest man. Why should we wish our stock to learn to eat it? You seem to think we should take particular pains to teach stock to eat it, which means starve them to it. That trick of your horses you mention sounds as if you had seed to sell yet. Be honest with God and man. We have had the severest drouth here in 1901 since 1857, yet cows and horses failed to eat sweet clover.

Green Hill, Ind., Sept. 24.

J. A. JOHNSTON.

Friend J., in the above three letters we certainly have evidence enough, as you say, to convince a jury—that is, if we did not have any witnesses on the *other* side. You say that the trick I mentioned about our horses sounds as if I had seed to sell *yet*. Yes, I have seed to sell, even at the present time. We sell all kinds of clover seed, because the clovers are all honey-plants, and valuable ones, and we think we are doing good by furnishing sweet clover, because we believe it is a valuable plant, not only for horses and cattle, notwithstanding the above letters, but because it will bring up poor soil in localities where the land is so poor (or so full of alkali) that no other known plant will grow. I am trying to be honest with God and man; and if I had the time I still think I could teach *your* horses and cattle to eat sweet clover. Now please read the two following letters on the other side of the question:

Mr. Root: — I noticed your comment on that sweet-clover letter in GLEANINGS for Sept. 15, and give you my experience with sweet clover.

There is a large irrigating-canal running through my ranch, and for several years both banks of it have been a thicket of sweet clover all summer, as the canal runs through cultivated fields, and no stock could get at it while green. The clover finally became so thick that it obstructed the water, and some of the ranchmen cut it with scythes on their places. I had heard of sweet clover being good stock feed, and decided to experiment, as I have nearly half a mile of that canal on my place. I put a wire fence along each side of the ditch, about 20 ft. from the water, thus fencing in the ditch its full length on my land, and left an opening into the feed-corral, where I had two cows and from two to three horses most of the time. The next morning after finishing the fence the two cows started in on that sweet clover, although the mangers were full of good alfalfa hay, and the cows in fine condition. The horses went at it that afternoon. The mangers were kept full all the time, and the stock always had access to them; but you ought to see those ditch banks now. They are as clean as if a mower had been used on them. The cows and horses are fat, and I was saved a job of running a scythe or *armstrong* mower. I have 50 stands of bees, but the clover had to go.

P. WILKAISKY.

Farmington, N. M., Oct. 5, 1901.

Mr. Root: — I see that C. H. Zurburg has sweet clover that horses will not eat. My experience is different. Last fall I sowed some five acres in timothy. The winter was hard, and, supposing I would have a light catch in February, I sowed sweet clover, got a fair stand, and more than half a stand of timothy. When the timothy seed was ripe and had begun to fall, the sweet clover was from 18 in. to 2 ft. high. I turned in three horses which had never learned to eat sweet clover. After a few days I noticed they were eating the clover and leaving the other grasses, of which there was an abundance, not only timothy but bluegrass and Bermuda grass; but they ate nothing but the clover until they got the last bit of it, and, owing to the extreme drouth, I fear the sweet clover will be all killed. My buggy horse ate sweet-clover hay greedily the first time he ever saw any.

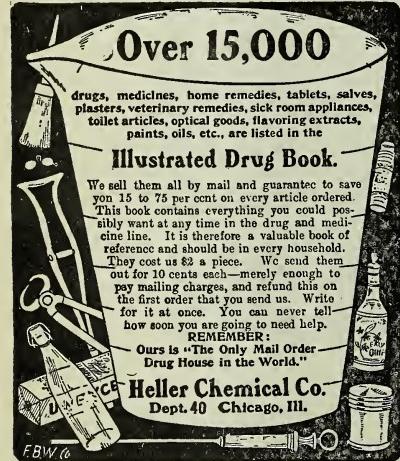
Bees gave no surplus this season, owing to the dry weather and absence of white clover, which was killed by last winter's freezes and absence of snow to protect it. Aster is blooming, and plenty of it.
Boston Sta., Ky., Sept. 21. M. S. GOSNEY.

These contradictory reports would almost seem to indicate that sweet clover is a different plant in some localities from what it is in others; but we frequently have contradictory reports on the matter, right in the same neighborhood. It certainly makes a difference in regard to the stage of growth at the time it is given to the horses and cattle. When it first comes up, before the stalks have had time to become tough and woody, I have seen it eaten with avidity by any horses or cattle I have offered it to—that is, after they found out it was good to eat.

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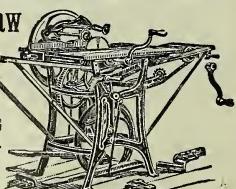
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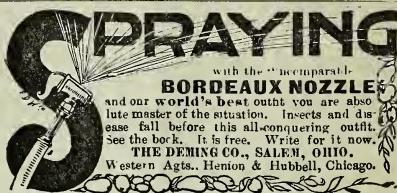


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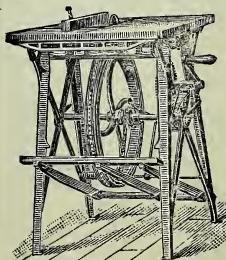


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